SHORT REPORTS

Postpartum acute renal failure: possible role for endarterial urokinase

Late postpartum acute renal failure is a rare complication of the puerperium, which, together with its insidious onset, probably explains why renal damage is generally irreversible by the time of diagnosis. It is important to note that the fully developed syndrome is usually preceded by definite, albeit non-specific, prodromal symptoms.

Case report

A 26-year-old gravida 5 (group A, rr; HLA 1, 2, and 8, W39) appeared to be well after an uncomplicated pregnancy. Two weeks post partum, however, she developed headaches and mild ankle oedema, and four weeks later she became anuric. Plasma urea was 48 mmol/l (289 mg/100 ml), haemoglobin was 7.1 g/dl, fragmented red cells were seen, platelets were $160 \times 10^9/l$ ($160\,000/mm^3$), and plasma fibrinogen was 7.5 g/l. Renal biopsy showed fibrin deposition in the afferent arterioles and interlobular arteries but no evidence of complement or immunoglobulin deposition. Bilateral renal arteriography showed symmetrical poor blood flow to the kidneys with no filling of the terminal branches. The catheters were left in position and 50 000 U urokinase was infused in bolus doses every eight hours to the non-biopsied kidney. A continuous infusion of heparin 50 U/hour was maintained to each side. Repeat angiography showed an increase in blood flow on the treated side only (figure). The catheters were removed on the third day. Only small volumes of urine were passed (300-400 ml/day), and peritoneal dialysis was begun. The plasma fibrinogen concentration remained raised (9.6 g/l), and fibrinolysis, as measured by the euglobulin lysis time, was reduced (patient 6 h; control 2 h). An induction dose of anicrod 1 U/kg body weight, was given by infusion over 12 hours, and the plasma fibrinogen concentration fell to 7.5 g/l. The same dose repeated as a bolus reduced the concentration to 0.85 g/l. Anicrod was used at intervals of three to seven days but the fibrinogen concentration recovered at a rate of 0.1 ± 0.02 g/l daily after each dose. After four weeks the plasma fibrinogen stabilised at 5.8 g/l. Fibrinogen turnover studies then showed a pool of 15.5 g (normal 4-7 g) and a half life of 2.3 days (normal > 3 days). When last seen the patient was managing well on intermittent haemodialysis.

tration was itself a contributing factor in the condition we cannot say. None the less, fibrin deposition in the renal microvasculature is the most important single aspect of the disease and the one to which attention should be directed initially. In our patient renal endarterial perfusion with urokinase to one kidney enabled comparison to be made with the effect of continuous low-dose heparin infusion to the other. Though this treatment had no effect in allowing recovery of renal function, the urokinase clearly produced an arteriographic improvement, while heparin did not. It has been suggested that anticoagulation aids recovery in some cases, but reports show that improvement is equally rare whether heparin is used or not.¹ Simple anticoagulation, though theoretically attractive, must therefore be regarded as inadequate in postpartum renal failure. Endarterial urokinase, however, might be of benefit provided the condition is recognised before renal damage becomes irreversible. Anicrod might be of value, but how low a concentration of fibrinogen would have to be achieved to alter fibrin deposition sufficiently is not known.

For treatment to be successful early diagnosis is necessary. Thus in the puerperal patient with apparently minor complaints of fluid retention, hypertension, and proteinuria appropriate biochemical and haematological investigations are indicated, and if the plasma urea concentration rises appreciably renal biopsy should be considered.

¹ Schoolwerth, A C, *et al*, *Archives of Internal Medicine*, 1976, **136**, 178.

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Gastric emptying in coeliac disease

Abnormally high concentrations of propranolol have been recorded in the plasma after oral administration of the drug to patients with treated coeliac disease.^{1 2} Among explanations proposed for this apparently contradictory phenomenon has been the possibility of accelerated gastric emptying. A preliminary study carried out on a small group of patients with a tube dye-dilution technique suggested that liquids do, in fact, leave the stomach more rapidly in coeliac disease than normal.³ We decided to investigate solid-phase emptying simultaneously with liquid-phase emptying in a group of patients with coeliac disease at various stages of treatment.

Patients, methods, and results

Ten patients with coeliac disease were compared with 10 normal controls. Four of the patients had been only recently diagnosed and were still on a normal diet, and six were on gluten-free diet. The fasting subject ingested a test meal of energy density 7.7 MJ/l (1.86 kcal/ml) at zero time and contain-

Mean gastric emptying times in minutes (ranges given in parentheses)

	Controls	Patients with coeliac disease	P*
Liquid phase (10 subjects in each group)	t_1^1 18.0 (7-31) t_2^1 53.9 (20-77)	32.0 (11-85) 59.7 (27-143)	<0.05 NS
Solid phase (5 subjects in each group)	t_1^1 64.5 (30-77) t_2^1 74.0 (84-123)	67.6 (26-98) 73.6 (50-122)	<0.05 NS

*Calculated by Wilcoxon's sum of ranks method.
NS = Not significant.

Bilateral renal arteriogram after two days of urokinase treatment.

Comment

The pathogenesis of this syndrome is unknown, though the clinical picture and renal histology have been well described.¹ In this patient the very high plasma fibrinogen concentration was a persistent feature of the illness and was due at least in part to a rapid rate of synthesis. Fibrinolytic activity was reduced. Both the high rate of fibrinogen synthesis and decreased fibrinolysis would be reflected in enhanced fibrin deposition, but whether the raised plasma fibrinogen concen-

ing as a liquid-phase marker $100 \mu\text{Ci } ^{113}\text{mIn}$ DTPA chelate.⁴ The solid-phase marker was $100 \mu\text{Ci } ^{99\text{m}}\text{Tc}$ sulphur colloid, heat-sealed into 30 nylon capsules measuring $10 \times 1 \text{ mm}$. The subject lay on a couch with the trunk raised 45° and a 5-cm crystal scintillation detector positioned over the gastric fundus, which had been previously located by percussion. A multichannel scaler and timer made automatic counts on both isotope channels simultaneously, and every 30 seconds the results were transferred as serial readings on paper tape to a batch-mode computer. This performed background subtraction, cross-talk correction, and adjustment for isotopic decay and produced curves for both phases of emptying. These permitted the estimation of quarter and half times for liquids in 20 instances and for solids in 10 instances. The table shows that there was no significant difference in half-emptying times for either phase between the patients and controls, and that there was, if anything, retardation of the early stage, as reflected by quarter-emptying times.

Comment

Although wide variation was found between the patients and controls in these indices of gastric emptying, the results do not support previous evidence of accelerated emptying in coeliac disease. In fact, in four of the patients emptying was slower than in the controls, and two of the controls emptied faster than any of the patients. The reason for divergence from other published results may be the different methodology used. Our conclusion is supported by evidence that metoclopramide, which affects only abnormal emptying, augments the plasma propranolol response to the drug when given by mouth.⁵ This in turn suggests that gastric emptying in coeliac disease is in some way retarded, and this retardation is corrected by the metoclopramide. This accords with clinical experience of the disease, in which vomiting and other upper gastrointestinal symptoms at presentation are rapidly corrected by diet. It seems reasonable to conclude that an accelerated rate of gastric emptying is unlikely to explain the augmented blood concentrations seen after ingestion of propranolol by patients with coeliac disease.

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¹ Parsons, R L, *et al*, *Gut*, 1976, **17**, 139.

² Schneider, R E, *et al*, *British Medical Journal*, 1976, **2**, 794.

³ Moberg, S, and Carlberger, G, *Scandinavian Journal of Gastroenterology*, 1974, **9**, 17.

⁴ Heading, R C, *et al*, *Gut*, 1971, **12**, 611.

⁵ George, C F, and Castleden, M, *British Medical Journal* 1977, **1**, 47.

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Schistosomal myelopathy

Although schistosomiasis is common, myelopathy is a rare complication. We report a typical case with particular reference to recent evidence that the cord damage is immunological.

Case report

A 28-year-old Greek man, resident in the Sudan, presented with numbness of the soles of his feet and difficulty in initiating micturition. His symptoms had progressed rapidly over five days, and the numbness spread up to his knees and was accompanied by weakness of both feet and urinary incontinence. During the preceding months he had visited the southern part of the Sudan, had frequently swum in local rivers, and had had two febrile episodes. The past medical and family history were noncontributory. There was severe, flaccid paraplegia, more pronounced on the right side, with only minimal residual power in the proximal muscle groups. Both

knee and ankle jerks were absent and the responses were unobtainable. There was complete loss of all sensory modalities below the level of L4 and he had urinary retention with overflow. The patient was transferred from Khartoum to Charing Cross Hospital, where examination showed that the sensory level had ascended to L1 on the right and T12 on the left with hyperaesthesia at T10 bilaterally. His arms remained unaffected and there was no abnormality in any other system.

Investigations showed: haemoglobin 13.9 g/dl; white cell count $19.7 \times 10^9/\text{l}$ ($19\,700/\text{mm}^3$), eosinophils 39% ; absolute count $7.7 \times 10^9/\text{l}$ ($7763/\text{mm}^3$); serum IgG 13.5 g/l (normal value 5-16 g/l); serum IgM 4.7 g/l (normal value 0.5-1.8 g/l). Examination of urine and stool showed no evidence of ova, cysts, or parasites. Complement fixation tests gave negative results for hydatid, microfilaria, and trichinella but a positive result for schistosomiasis at a titre of 1/80. Rectal biopsy showed an active ovum of *Schistosoma mansoni*. Myelography, performed two days after admission, showed nothing abnormal; cerebrospinal fluid (CSF) examination at that time yielded a sterile fluid containing protein 1 g/l, glucose 3.4 mmol/l (62 mg/100 ml), and white cells $0.03 \times 10^9/\text{l}$ ($300/\text{mm}^3$), mainly lymphocytes. Serial examination showed a maximum protein concentration one week after admission of 3.2 g/l, with the cell count gradually falling. The CSF IgG was 0.19 g/l (up to 0.04 g/l). *S. mansoni*-specific antibodies to ova and worms were shown by the technique of double counter-current immunoelectrophoresis in both serum and CSF.

Subsequently the neurological condition remained unchanged. He received a course of nifedipine 25 mg/kg twice daily for 14 days and then prednisolone 10 mg three times daily, reducing to 5 mg daily after one week, but this produced no objective improvement in the flaccid paraplegia, sensory deficit, or bladder function.

Comment

Human schistosomiasis is caused by parasitic infestation by members of the family Bilharziadae, principally *S. haematobium*, *S. japonicum*, and *S. mansoni*. Acute schistosomiasis *mansoni* is recognised as having diverse presentations¹ but involvement of the central nervous system is uncommon and myelitis is rare.² This case illustrates some reported features—namely, the eosinophilia in the peripheral film and the characteristic findings in the CSF of lymphocytic pleocytosis with raised protein concentrations.³ Myelography is obligatory, as demonstration and removal of a discrete granuloma may materially improve the prognosis.³

The importance of the individual allergic response to acute infestation with *S. mansoni* has long been recognised,⁴ and the recent demonstration of circulating immune complexes in the serum of patients suffering from acute schistosomiasis⁵ supports this view. These complexes were not found in either the serum or CSF of our patient but antibodies to *S. mansoni*-specific ova and worms were shown and this was reflected in the raised serum IgM and CSF IgG concentrations—an observation not previously made. Although complexes were absent the presence of the type-specific antibodies in the CSF seemed to confirm that the acute necrotising myelitis in our patient was partly mediated by the immune response to either worm or ova antigen or both.

Schistosomal myelopathy should always be considered as a potentially treatable cause of acute transverse myelitis in patients who come from endemic areas.

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² Abbott, P H, and Spencer, H, *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1953, **47**, 221.

³ Wakefield, G S, *et al*, *Brain*, 1962, **85**, 535.

⁴ Bird, A V, *Neurology (Minneapolis)*, 1964, **14**, 647.

⁵ Phillips, T M, and Draper, C C, *British Medical Journal*, 1975, **2**, 476.

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